

crypta (p. 209), Makemo; *C. a. agassizi* (p. 210), Apataki; *C. a. nesiarcha* (p. 210), Rangiroa; *C. a. erema* (p. 211), Makatea — all in the Paumotu Group; *C. percernis* (p. 213), Nukuhiva, Marquesas Isls.; *Pinarolestes nesiotes* (p. 216), Kambara, Fijis; and *Myzomela rubrata dichromata* (p. 220), Ponape Isl., Eastern Carolines. There were also three new forms of *Collocalia* in the collection which were described by H. C. Oberholser in 1906. On page 201, Mr. Wetmore proposes a new generic name *Haplornis* in place of *Muscylva* Lesson. He gives an exhaustive history of the latter genus and its applications, and in order to eliminate it and avoid the complications which its use would involve he designates as its type *Muscicapa carulea* Gmel., thus fixing it in the synonymy of *Hypothymis* Boie. This is very commendable but he fails to designate any type for his new genus and being admittedly a substitute for *Muscylva* it may be argued that it falls with it. In the hope that it may be saved from such a fate we would designate *Rhipidura lessoni* Gray as its type which seems to have been Mr. Wetmore's intention.

Incidentally the author shows that Mathews' proposed genus *Scophaethon* is not deserving of recognition and that the correct name for the Red-faced Booby is as generally recognized *Sula piscator*, not *S. sula* as claimed by Mathews. (See however p. 18) of this 'Auk'.

This paper is a valuable contribution to Polynesian ornithology and in the constant recurrence of specific names accredited to Titian Peale we are forcibly reminded of the historic United States Exploring expedition which touched on many of these same islands in 1838-1842. — W. S.

Coker on the Guano Birds of Peru.¹— The study of bird communities constitutes one of the most fascinating branches of ornithology and as the community that Mr. Coker describes in the present paper is one of the largest known in the world a peculiar interest attaches to his account. Engaged by the Peruvian government to make an economic study of the guano and fishery industries he spent the period from December, 1906 to August, 1908, on the coastal islands enjoying unrivalled opportunities for the study of the life histories of the various species of birds which breed there, and the present report embodies the results of his observations.

These Peruvian islands have long been noted for the remarkable deposits of guano left there by the nesting birds and its exportation for agricultural purposes has been going on for centuries. Some idea of the extent of the industry may be gathered when we learn that from 1851 to 1872 no less than ten million tons of high grade guano were extracted from the Chincha Islands alone, valued at the time at about three-quarters of a billion dollars. At the present time the high grade deposits have been well nigh exhausted and inferior deposits are being exported. This, how-

¹ Habits and Economic Relations of the Guano Birds of Peru. By Robert E. Coker. In charge Scientific Inquiry, United States Bureau of Fisheries. Proc. U. S. Nat. Mus. Vol. 56, pp. 449-511, plates 53-69. 1919.

ever, refers only to the accumulation of former years while the annual production of the birds today amounts to no less than 20,000 tons. The conservation of such an asset is naturally a problem of the utmost importance to the government. Indeed this seems to have been recognized from the earliest times for older authors quoted by Mr. Coker tell us that the Inca kings forbade landing on the islands during the nesting season, under pain of death, and the killing of the birds on or off the islands at this time was prohibited. Those who object to the stringency of modern bird and game laws may well take note of this!

Mr. Coker points out the interesting fact that the value of the guano depends largely upon the nature of the islands selected by the birds as nesting grounds. Those like the Chinchas are absolutely without rainfall, no vegetation is possible and the nitrogen cannot be converted into ammonia and lost by evaporation as would be the case were it subjected to rainfall, but is perfectly preserved in a form readily available for agricultural purposes. Some of the more northern islands where rain occasionally falls produce only inferior grades of guano.

The most important of the guano birds is the White-breasted Cormorant or "Guanay" (*Phalacrocorax bougainvillei*) and in June 1907, Mr. Coker found their colony on the Chincha Islands covering an area of fifteen acres, while a careful estimate showed that there were some 180,000 nests, and three-quarters of a million birds including old and young. In the following year the colony on these islands was half as large again due in part to accessions from another island. The Pelican or "Alcatraz," (*Pelecanus thagus*), comes second in importance and the Booby, "Piquero," (*Sula variegata*) third. Von Tschudi placed the Booby first as a guano producer, and his statement has been generally followed ever since, but after careful investigation Mr. Coker can find no evidence of conditions having been materially different in Tschudi's time from those prevailing today, and there is no question about the relative rank of the species at the present time. Other birds inhabiting the islands are the Penguin, (*Spheniscus humboldti*), several Gulls and Terns, an Albatross (*Diomedea irrorata*), several Petrels and Shorebirds, an additional species of Booby and two of Cormorants and a Man-o'-war bird. The Condor, two Turkey Vultures and a Passerine bird, the "Chirote," (*Cinclodes taczanowskii*) complete the list.

To the life histories of all of these Mr. Coker makes valuable contributions while the economic aspect of the guano industry is exhaustively treated. Twenty-five half-tone reproductions of photographs give one an excellent idea of these remarkable barren islands and the masses of birds which literally cover their surface during the nesting season. Mr. Coker is to be congratulated upon doing an excellent piece of economic work and making at the same time a most important contribution to ornithological literature.—W. S.